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### The effects of reason and event saliency on health-related decisions

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### Abstract

The current study examined how event saliency and reason for action influence the amount of regret anticipated about a foregone option, and on people's anticipated choice of behavior when they are confronted with a choice between two equally aversive options. The participants were 120 undergraduate psychology students. Participants who were prompted to imagine choosing to fulfill an internal desire instead of an internal obligation anticipated significantly more regret than those who were prompted to make the opposite choice. No significant differences in the amount of regret anticipated was found between participants who had to choose between two external obligations. Interestingly, participants were not more likely to choose an action which would have avoided a salient outcome, when imagining actually being in the situation. These findings were interpreted to suggest dissociation between people's anticipated emotions and subsequent choice of action regarding important preventative health behavior. The implications for health promotion campaigns are discussed.

### Keywords

saliency, event, decisions, reason, related, effects, health

### Disciplines

Arts and Humanities | Life Sciences | Medicine and Health Sciences | Social and Behavioral Sciences

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## The Effects of Reason and Event Saliency on Health-related Decisions

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### Abstract

The current study examined how event saliency and reason for action influence the amount of regret anticipated about a foregone option, and on people's anticipated choice of behavior when they are confronted with a choice between two equally aversive options. The participants were 120 undergraduate psychology students. Participants who were prompted to imagine choosing to fulfill an internal desire instead of an internal obligation anticipated significantly more regret than those who were prompted to make the opposite choice. No significant differences in the amount of regret anticipated was found between participants who had to choose between two external obligations. Interestingly, participants were not more likely to choose an action which would have avoided a salient outcome, when imagining actually being in the situation. These findings were interpreted to suggest dissociation between people's anticipated emotions and subsequent choice of action regarding important preventative health behavior. The implications for health promotion campaigns are discussed.

### Introduction

Counterfactual thinking involves thoughts of "what if" or "if only" after an event has occurred, allowing us to consider alternative versions of reality- how an event could have turned out better or worse. Counterfactual thoughts are comprised of an antecedent (e.g., "If only I had done X...") and an outcome ("...Y would have never happened"). Hence, engaging in upward counterfactual thinking (i.e., where one compares what has happened with a more desirable outcome) has been shown to help people learn from their mistakes by allowing the identification of events and/or actions that caused a particular outcome, thus highlighting how to avoid them in the future (Roese, 1994).

A concept related to counterfactual thinking is anticipated regret which involves imagining how much regret would be felt following an imagined, unfavourable *future* event (Bell, 1982; Zeelenberg, Beattie, van der Pligt, & de Vries, 1996). Studies have shown that anticipating future negative affect caused by a choice to engage in a particular behaviour can decrease the likelihood that the individual will engage in this behaviour in the future, as they will want to

minimise the chances of experiencing this regret (Page & Colby, 2003). Janis and Mann (1977) have referred to this process as 'vigilant decision making'. They purport that anticipating regret makes people more attentive to their surroundings, and makes them think more carefully and elaborately about their circumstances, creating stronger attitudes and improving decision-making processes.

Paradigms in experiments which assess counterfactual and anticipated regret commonly require participants to imagine a hypothetical scenario in which a choice was made and a negative outcome resulted. Other paradigms require participants to choose between two potential outcomes where a negative outcome resulted from this choice, making the outcome more salient. However, in most studies one of the two potential outcomes is obviously a bad outcome and the other obviously good. Naturally, when deciding between two alternatives, we most often choose the option which we believe will elicit the least amount of regret. Paradigms that are comprised of one bad outcome and a default 'good' option limit the interpretability of the effects of counterfactual thoughts and thoughts of anticipated regret on decision making and behaviour. Such paradigms do not directly manipulate the anticipation of counterfactual regret; this regret is instead influenced by the framing of the decision or the decision itself (Hetts, Boninger, Armor, Gleicher & Nathanson, 2000). Hence, thoughts of anticipated counterfactual regret may only be able to influence choices when such a default 'good' outcome is available (Simonson, 1992). Such paradigms may also have limited ecological validity as they don't consider how decisions may be made when competing motivational factors are present, and a choice has to be made between two alternatives. To address these issues Hetts, et al. (2000) conducted a study which examined how anticipated regret influences decision making and behaviour when one of two equally aversive outcomes is made salient. In their study participants were instructed to imagine they had arrived at college for an important exam. On their way to the exam they realised they may have forgotten to lock their car door. They were either told that they went back to check their car which was locked and they consequently performed poorly on the exam ('exam regret') or they went to the

exam to later go back to their car to find it had been broken into ('car regret'). Participants were required to indicate whether they would have gone to check their car or to go straight to class for the exam. Results showed that participants induced to imagine a future regret were more likely to choose behaviours that would avoid the experience of that regret. That is, participants in the car regret condition were more likely to say that they would have gone back to check their car, and vice versa for the exam regret condition. This study demonstrates that anticipatory counterfactual thoughts may still be generated when there is no alternative, 'good' option available, and that other factors (such as event saliency) may be used to evaluate the situation and to make such decisions.

Apart from event saliency, another factor shown to influence decision making and behaviour is reason for action. Walsh and Byrne (2007) have shown that if the reason for a person's action was out of obligation (for example, in compliance with societal rules and/or norms); they are less likely to think in a counterfactual manner following an adverse event. This is because these types of reasons are seen as less mutable and alterations to the choice of action as not permissible. However, if the reason for a person's action was in order to serve their own desires or goals, then people tend to think of more possible counterfactual outcomes following an adverse event. This is because these desires are seen as more changeable, and alternative outcomes more permissible.

In the experiment to be reported in this paper, we explored how event saliency and reason for action in combination may influence the amount of regret anticipated about a foregone option, and on people's anticipated choice of behaviour in a health-related context. The boundaries between personal desires and obligations can be unclear at times as one may be motivated to engage in a behaviour not only because they are obliged to but also because they want to. The current experiment examined the effects on regret and behaviour when a clear comparison between these different types of reasons is made. The information gained from this study may allow insight into how people make decisions in complex circumstances. This is of particular importance in health-related contexts as this information can be used in campaign messages to persuade people to take better care of their health and engage in preventative health checks- particularly in skin cancer preventative checks. While primary prevention of this disease (i.e., preventing cancer by employing protective behaviours, such as using sunscreen, and avoiding the sun) is of extreme importance, secondary prevention measures (i.e., preventing symptoms that have already developed from worsening) are just as vital. In fact, it is estimated that over one third of all fatal cancer cases could be prevented by making lifestyle changes and many more could be effectively treated (and far more cost-

effectively) if they were detected early (Cancer Council Australia, 2009). While many contemporary campaigns focus on the primary prevention of skin cancer, fewer of these address the issues and barriers preventing people from going to get their skin examined by a professional, after having identified a suspicious growth or change on their skin.

We modified the paradigm used by Hetts et al. (2000) so that it was obvious the salient outcome was caused by choosing to fulfill either an internal desire or an obligation. To further examine this concept the choice between the two adverse outcomes was either between an internal desire and an obligation, or between two obligations.

We expected participants prompted to imagine fulfilling an internal desire (going on a holiday) over an obligation (seeking expert diagnosis for suspected melanoma) would anticipate significantly more regret than participants prompted to make the opposite choice. We expected no differences in anticipated regret between participants told they had to choose between two competing obligations (attending an interstate family funeral vs. seeking expert diagnosis for suspected melanoma).

We also asked how participants believed they would have acted had they actually been in the situation described. We expected participants would indicate they would have chosen the action opposite to what was depicted (i.e., the action that would have avoided the negative outcome), especially if the outcome resulted from choosing to fulfill a desire over an obligation. Participants told to imagine they chose to fulfill a health obligation over a desire were not expected to say they would have made the choice opposite to what was described (i.e., to go on the holiday and skip getting their skin checked for cancer) as missing out on a holiday in return for peace of mind that their health is in good condition may seem worthwhile. At most we expected participants in this condition to demonstrate only a slight preference for going on the holiday over getting their skin checked. For participants who were told they had to choose between fulfilling two obligations it was expected that they would choose to avoid the salient outcome by choosing the action opposite to what was prescribed.

## Method

### Participants

The participants were 120 psychology students (male: 27; female: 93). The ages of the participants ranged from 17.67 to 52.25 years, with a mean age of 22.87 years. Participants took part in the experiment on a voluntary basis after providing written informed consent. Recruitment of participants and all research activities for this study were in accordance with protocol approved by the University of Wollongong Human Research Ethics Committee.

## Design and materials

The experiment employed a 2 (reason for action) x 2 (salient outcome) between-subjects factorial design. This resulted in four experimental conditions. However, two additional control conditions were also included to assess participants' baseline preferences for the given behavioural options. Hence, participants were randomly allocated to read one of six different stories ( $n=20$ ) which manipulated event saliency and reason for action and were designed to elicit anticipated counterfactual regret. One of two core story versions could be presented, which varied according to the nature of the event that competed with a decision to check up on a suspected case of melanoma: one where the competing choice was to fulfill an internal desire (internal desire version [IDV]), the other to fulfill a social obligation (social obligation version [SOV]). In the SOV we chose to pit the health obligation against a social obligation to create enough of a difference between the competing choices while still maintaining an obligatory status. Participants were told that due to financial constraints, they could only afford to choose to fulfill either the health obligation or the "other" option (i.e., the social obligation or internal desire). Within each of the two story versions there were three separate conditions: two experimental conditions in which one of two different outcomes could be made salient, and a control condition in which no such saliency manipulation was made so baseline preferences for each action could be assessed. In each experimental condition, it was made clear the outcome resulted from choosing to fulfill an internal desire, a social obligation or a health obligation.

Participants who received the IDV core story were told that they had to make a choice between getting a suspicious looking mole on their arm checked by a dermatologist (health obligation) and going on a 'once-in-a-lifetime' trip with friends (internal desire). Event saliency was manipulated by either instructing them to imagine that they had chosen to go on the trip with friends to later find out that the mole was cancerous, or that they had chosen to get their skin checked out to find that it was benign and they hence, missed out on the trip.

Participants who received the SOV core story were told that they had to choose between getting their skin checked for cancer (health obligation) and attending a much loved family member's interstate funeral (social obligation). They were then either told to imagine that they had chosen to attend the funeral to later be diagnosed with cancer, or that they had chosen to get their skin checked to find it was benign and they hence, missed out on saying goodbye to a loved one. We chose to focus the health obligation choice in each condition around a hypothetical skin cancer scenario due to the high prevalence of this cancer type in Australian society, and its ability to affect people of all ages, ethnicities and genders (Cancer Council Australia, 2003).

## Procedure

Participants took part in the study either individually or in small groups with up to three other people.

After providing informed consent participants were randomly assigned to read one of the six story versions ( $n=20$ ). Afterwards participants were required to respond to questions related to their story version. The participants in the experimental conditions were firstly required to answer a question related to how much regret they anticipate they would feel in relation to the highlighted potential story outcome. They responded on a seven point rating scale ranging from 'very regretful' (7) to 'not at all regretful' (1), with an 'undecided' option available as the mid-point. Control participants did not receive this initial question. Subsequently all participants answered a question related to which course of action they would have taken had they actually been in the situation. They indicated their response on a three-point categorical response scale with 'get your mole checked with a dermatologist' on one end of the scale and either 'go on interstate holiday with your friends' (IDV) or 'go interstate to attend the family funeral' (SOV) on the other end. Unlike Hetts et al. (2000), who employed a two option forced response format for this question, an 'undecided' option was also included in the current experiment as it was hypothesised this may represent a legitimate category of people who were genuinely undecided. In total the experiment took around 10 minutes to complete. Upon completion of the task participants were debriefed.

## Results

All analyses were evaluated against an alpha level of .05. A 2 (reason for action) x 2 (salient outcome) univariate ANOVA was conducted on mean regret ratings.

The means for regret ratings for the four experimental groups can be found in Figure 1. A main effect of saliency was found,  $F(1, 77) = 52.28$ ,  $p = .000$ . A significant interaction was also found between reason for action and event saliency,  $F(1, 77) = 7.37$ ,  $p = .008$ . Upon examination of the simple effects it was found that there was a significant difference in the amount of regret felt between the internal desire and health obligation groups ( $MD = 2.41$ ,  $SE = .42$ ,  $p = .000$ ); however there was no significant difference between the amount of regret felt between the social obligation and health obligation groups ( $MD = .80$ ,  $SE = .42$ ,  $p = .062$ ), supporting our hypothesis.

A chi-square analysis was conducted to examine the relationship between the story condition and the action participants indicated they would have taken were they actually in the situation. This analysis was done on the control and experimental groups separately. The percentages of control participants' responding can be found in Figure 2. A significant difference in responding was found between the two control groups,

$\chi^2(2)=10.98$ ,  $p=.004$ . Results indicate that baseline preferences for participants who read the IDV story were more likely to say they would get their skin checked for cancer than go on the holiday with friends. For participants who received the SOV, story responses were more evenly spread between ‘get your mole checked with dermatologist’ and ‘go interstate to attend the family funeral’ ( $\chi^2(2)=1.97$ ,  $p=.740$ ). This finding is consistent the reason for action prediction, i.e., that participants would be more likely to avoid anticipated counterfactual regret especially if it resulted from choosing to fulfill a desire over an obligation. Participants who had to choose between fulfilling two obligations did not clearly identify one response option that would avoid greater feelings of anticipated counterfactual regret.

The percentages of the actions chosen for each experimental condition can be found in Figure 3. No significant difference in responding was found for the experimental groups where participants had to choose between fulfilling an internal desire or an external obligation,  $\chi^2(2)=.31$ ,  $p=.857$ , nor was a significant difference found when the participants had to choose between fulfilling two obligations,  $\chi^2(2)=.47$ ,  $p=.792$ . Although these results show that participants were more likely to indicate they would have acted in a manner which would have avoided the salient outcome, these results did not reach significance. Compared to the control groups, the results were more evenly spread between the two response options for both the IDV and SOV groups. Within each experimental group, there were also a sizeable proportion of participants choosing the “undecided” option. These results indicate that the combination of event saliency and reason for action does not significantly make participants want to avoid the salient counterfactual outcome had they been in that situation.

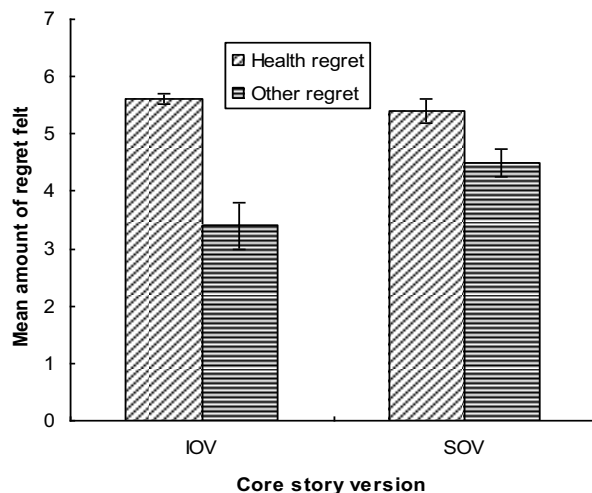


Figure 1: Ratings for the four experimental conditions. “Other” refers to either internal desire or social obligation. Error bars represent  $\pm 1$  units of standard error.

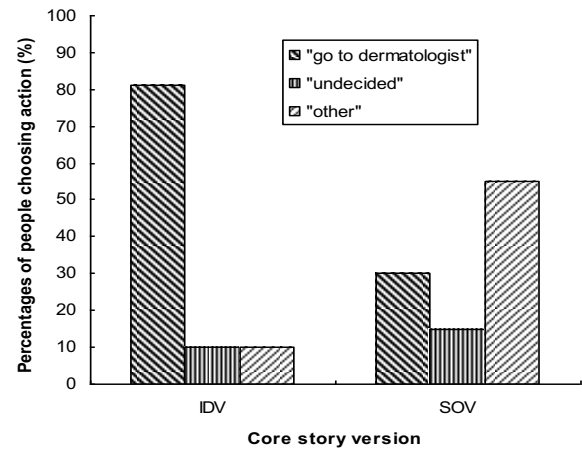


Figure 2: Participants’ anticipated choice of behaviour by core story version for each control condition.

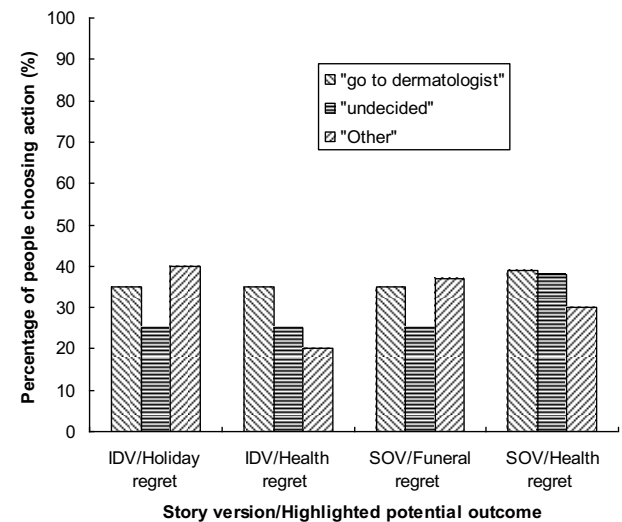


Figure 3: Participants anticipated choice of behaviour by story version and experimental condition.

## Discussion

This experiment explored how event saliency and reason for action may influence the amount of regret anticipated about a foregone option and on people’s anticipated choice of behaviour in a health related context. Consistent with our expectations, when having to choose between two competing actions, both with the potential to result in a bad outcome, making a choice to fulfill an internal desire over an obligation increases the amount of regret felt. Less regret is felt if a negative outcome resulted from choosing to fulfill one obligation over another. This information can hopefully be applied to health promotion campaigns. Recent campaigns have aimed to encourage people to go for cancer screening even when there are other competing external obligations. For example, the campaign entitled “Breast

cancer won't wait. Everything else can" aims to place health obligations before any other types of obligation (National Breast and Ovarian Cancer Centre, 2008). However, based on the results of this experiment, messages may be effective if they emphasise that it is more important to take care of one's health than to fulfill competing desires that may sometimes be viewed as high-priority obligations.

The results show that saliency and reason for action do not significantly influence participants' anticipated choice of action in the manner expected. Hetts et al. (2000) found that participants were more likely to choose an action that avoided the described negative outcome when event saliency alone was manipulated. We expected that participants in the IDV groups who were told that they chose to fulfill an internal desire over an obligation would be more likely to indicate they would choose to get their skin checked out for cancer rather than go on a holiday with friends. For participants who imagined that they fulfilled a health obligation over a desire we expected responses to be more evenly spread, but with a slight preference for going on the holiday with friends. For participants in both of the SOV groups we expected participants who were told that they went to the funeral and ended up with skin cancer to indicate they would get their skin checked by the dermatologist; and for participants who were told they got their skin checked for cancer and missed out on the family funeral to indicate they would have chosen to go to the funeral. However, in our experimental groups participants did not readily choose the action that would have avoided the outcome and hence, the associated counterfactual regret. This finding suggests that getting people to imagine the reasons for action makes them think about the possible factors that could influence the situation (such as competing obligations and desires) and prevent them from carrying out the action. When trying to persuade people to take an action (such as preventative health checks) it may not merely be enough to get them to think about the negative outcomes of and regret caused by an action (or inaction), it is also important to get them to consider the wider context (particularly reasons for action) and get them to work through any barriers that may be present, as these undoubtedly will arise in real life.

At this point the limitations of this study need to be addressed. Placing the "undecided" response option as a midpoint on the continuous rating scale which examined how much regret was felt may have confounded results. The responses ranged from "not at all regretful" to "very regretful" so have an "undecided" response as a midpoint may indicate that there is some regret felt. Instead of placing this "undecided" option as a midpoint it should have been placed next to the scale, rather than be included within it. Based on the lack of significant difference between the four experimental conditions on anticipated behaviour it may be that the scenarios were not properly tapping into (possibly

demographic) appropriate constructs. Alternatively the results may have been confounded by the presence of an 'undecided' response option. The high prevalence of participants indicating they were "undecided" portrays the dilemma participants faced in the scenarios. In order to gain a better understanding of the effects of event saliency and reason for action on anticipated behaviour, it may be better to provide a two-alternative forced response for this question as in the Hetts et al. (2000) study. Hence, further validation of the testing materials and response options is necessary before any definite conclusions about the joint effects of event saliency and reason for action on decision making can be made. Research also needs to be done with a community sample to enhance ecological utility so that findings can be generalized to the wider community.

In conclusion, the current experiment allowed a preliminary investigation using a complex paradigm which examined the interaction between event saliency and reason for action and the effects of these variables on anticipated regret and behaviour in a health related context. Pending further investigation and validation of testing materials, the principles governing human judgment about salient outcomes and reasons for actions can hopefully be applied to preventative health campaigns to improve population health outcomes.

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